

WHAT IS CLAIMED IS:

1 1. An apparatus for aerial spray marking of ground surfaces,
2 said apparatus comprising:
3 a source of a marking substance; and
4 means for producing a highly forceful shot of said marking
5 substance capable of penetrating dense foliage.

1 2. The apparatus of claim 1 wherein said means for
2 producing a highly forceful shot is a solid stream spray nozzle.

1 3. The apparatus of claim 2 further comprising means for
2 tilting said solid stream spray nozzle.

1 4. The apparatus of claim 1 further comprising means for
2 adjusting shot forcefulness.

1 5. The apparatus of claim 1 further comprising means for
2 supporting said apparatus from an aircraft.

1 6. A system for aerial spraying of ground surfaces, said
2 system comprising:
3 a storage tank for holding a substance;
4 means for pressurizing said storage tank;
5 a spray nozzle assembly; and
6 a feed line connecting said storage tank and said nozzle
7 assembly so as to deliver pressurized substance to said spray nozzle
8 assembly.

1 7. The system of claim 6 wherein said means for
2 pressurizing said storage tank includes a cylinder of compressed gas.

1 8. The system of claim 7 wherein said cylinder contains an
2 inert gas.

1 9. The system of claim 7 further comprising a pressure
2 regulator, a high pressure line connecting said cylinder to said pressure
3 regulator, and a first regulated gas line connecting said pressure regulator to
4 said storage tank.

1 10. The system of claim 9 wherein said spray nozzle
2 assembly includes a first valve connected to said feed line, a spray nozzle
3 connected to said first valve, and a second valve arranged to open and close
4 said first valve.

1 11. The system of claim 10 wherein said spray nozzle is a
2 solid stream spray nozzle.

1 12. The system of claim 10 further comprising means for
2 tilting said spray nozzle.

1 13. The system of claim 10 further comprising:
2 a second regulated gas line connecting said pressure regulator
3 to said second valve; and
4 first and second pneumatic control ports fluidly connecting said
5 second valve to said first valve, wherein said second valve is a solenoid valve
6 having a first state in which said first pneumatic control port is pressurized by
7 said second regulated gas line and a second state in which said second
8 pneumatic control port is pressurized by said second regulated gas line, and
9 wherein said first valve is closed when said first pneumatic control port is
10 pressurized and said first valve is opened when said second pneumatic
11 control port is pressurized.

1 14. The system of claim 13 further comprising a controller for
2 controlling said second valve.

1 15. The system of claim 14 further comprising means for
2 selecting how said controller controls said second valve.

1 16. The system of claim 14 further comprising a shut off
2 valve disposed in said feed line.

1 17. The system of claim 16 further comprising means for
2 sensing pressure of gas output from said pressure regulator, said controller
3 controlling said shut off valve in response to said means for sensing pressure.

1 18. The system of claim 7 further comprising a frame, said
2 storage tank, said cylinder and said spray nozzle assembly all being mounted
3 on said frame.

1 19. The system of claim 18 wherein said cylinder is
2 removably mounted to said frame.

1 20. The system of claim 18 further comprising means for
2 supporting said frame from an aircraft.

1 21. The system of claim 20 wherein said means for
2 supporting includes at least one attachment arm extending from said frame
3 and a cable connected at one end to said attachment arm and at another end
4 to an aircraft.

1 22. The system of claim 6 wherein said spray nozzle
2 assembly includes a main valve connected to said feed line and a spray
3 nozzle connected to said main valve.

1 23. The system of claim 22 wherein said spray nozzle is a
2 solid stream spray nozzle.

1 24. The system of claim 22 further comprising means for
2 tilting said spray nozzle.

1 25. The system of claim 22 further comprising a shut off
2 valve disposed in said feed line between said storage tank and said main
3 valve.

1 26. A method for aerial spray marking of ground surfaces,
2 said method comprising:
3 providing a source of a marking substance;
4 flying over a ground surface; and
5 spraying a highly forceful shot of said marking substance onto
6 said ground surface, wherein said shot is forceful enough to penetrate dense
7 foliage.

1 27. A method for aerial spraying of ground surfaces, said
2 method comprising:

3 providing a storage tank for holding a substance to be sprayed;
 4 pressurizing said storage tank;
 5 supplying pressurized substance from said storage tank to a
 6 spray nozzle assembly;
 7 flying over a target site; and
 8 selectively activating said spray nozzle assembly to spray
 9 pressurized substance onto ground surfaces.

1 22. The method of claim 27 wherein said storage tank is
 2 pressurized by introducing a pressurized gas into said storage tank.

1 29. The method of claim 28 wherein said gas is an inert gas.

1 30. The method of claim 28 further comprising sensing the
 2 pressure of said pressurized gas and shutting off supply of pressurized
 3 substance from said storage tank to said spray nozzle assembly if the sensed
 4 pressure falls below a predetermined level.

1 31. The method of claim 28 further comprising selecting the
 2 pressure of said pressurized gas introduced into said storage tank.

1 32. The method of claim 27 wherein said spray nozzle
 2 assembly includes a solid stream spray nozzle.

1 33. The method of claim 32 further comprising tilting said
 2 spray nozzle to a desired angle.

1 34. The method of claim 27 wherein a pressurized gas is
 2 used to selectively activate said spray nozzle assembly.

1 35. The method of claim 27 wherein said substance to be
 2 sprayed is a marking substance.

1 36. The method of claim 35 wherein said substance includes
 2 paint.

1 37. The method of claim 35 wherein said substance includes
 2 a luminescent material.